

MAKING THE CASE:

Landscape Architects as Infrastructure Leaders in Canada



INTRODUCTION

Recognized as a STEM (Science, Technology, Engineering, and Mathematics) discipline, landscape architects are stewards of both natural and built environments. They employ an extensive understanding of ecological systems, sustainability, and spatial analytics to design spaces that bolster community well-being, enhance biodiversity, promote equity and inclusion, and meet the challenges posed by climate change. Bridging the gap between the built and natural environments, landscape architects promote multidisciplinary and collaborative approaches to the creation of meaningful, enjoyable environments that accommodate both the needs of society and the natural environment, respecting the cultural landscapes of the past and planning for a sustainable future.

Canada's federal government's platform on infrastructure identifies three important themes for the CSLA community:

- **community and housing (social infrastructure);**
- **mobility (public transit); and**
- **climate adaptation (green infrastructure).**



Dale Hodges Park in Calgary, Alberta - Leveraging sustainable infrastructure a



Landscape architects promote multidisciplinary and collaborative approaches to the creation of meaningful, enjoyable environments

In these days of extreme situations for communities (heat, drought, heavy rains, fires, etc), it is difficult to address one of the themes without addressing the other. Sustainable designs are accomplished through green building standards, technologies, and materials, and many cities have started to adopt new approaches to revitalization. But to be able to meet their sustainability goals for a stronger economy and a cleaner environment, infrastructure policies (federal, provincial and municipal) must be brought up to date to include nature-based solutions and a holistic approach to housing and mobility issues.

A 2024 report on the *State of the Profession of Landscape Architecture in Canada* confirms that landscape architects have been ahead of the curve in addressing climate issues. Designing spaces that protect individuals and minimize the use of natural resources are concepts that have long been applied to the work of landscape architects. They collaborate across disciplines, including policymakers, planners, engineers, architects, and ecologists, to design and implement green infrastructure that enhances ecosystem services while supporting human well-being. Landscape architects work to protect natural areas and to promote planning and design that benefits and sustains both ecosystems and society, and they are uniquely positioned to lead Canada's infrastructure transformation to address housing, mobility and climate defense in an integrated way, making our communities more livable.

Learn more:

- » [Livable Communities Brief | CSLA](#)
- » [Dale Hodges Park, CSLA landADAPT Case Study Series](#)

LEADING INFRASTRUCTURE TRANSFORMATION

Landscape architects are uniquely positioned to lead Canada's infrastructure transformation by integrating nature-based solutions, human-centered design, and systems thinking to create resilient, sustainable communities.



1 Housing

Landscape architects are critical to addressing Canada's housing crisis by ensuring new developments prioritize livability and sustainability alongside affordability. While current strategies emphasize speed and quantity, Landscape architects bring systems thinking to integrate housing with green infrastructure and mobility networks. Their early involvement in policy and design stages enables holistic planning—optimizing land use, enhancing microclimates, and embedding nature-based solutions—creating complete communities that balance density with quality of life.

2 Mobility

Landscape architects lead the transformation of mobility systems from car-centric models to sustainable, human-centered networks. By designing streetscapes, trails, and transit corridors that integrate green infrastructure—such as tree canopies, bioswales, and wildlife crossings—they reduce emissions, restore ecosystems, and improve public health. Their approach combines ecological function with cultural identity, making active transportation safe, attractive, and meaningful while supporting climate resilience.

3 Climate Defence

Landscape Architects are at the forefront of climate adaptation, replacing reliance on “grey” infrastructure with nature-based solutions like wetlands, rain gardens, and living shorelines. These strategies mitigate flooding, heat, and erosion while enhancing biodiversity and community well-being. By integrating green and grey systems across housing and mobility projects, Landscape Architects design resilient infrastructure that works with natural processes, delivering long-term protection and ecological benefits.

Downsview | Ontario

The Downsview redevelopment transforms a former airport into a sustainable urban district, with landscape architects leading the integration of parks, stormwater systems, and microclimate-sensitive design.

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At Jericho Lands, landscape architects collaborate with Indigenous communities to embed cultural principles and ecological frameworks into a high-density, mixed-use neighbourhood.

Promenade Samuel-De Champlain | Québec

Landscape architects reconnected Quebec City to its riverfront through a 6.8 km promenade that combines active transportation with ecological restoration and cultural storytelling.

Peter Lougheed Wildlife Overpass | Alberta

This landmark project demonstrates how landscape architects design mobility infrastructure that restores wildlife connectivity while improving highway safety.

St. George Rainway | British Columbia

Landscape architects partnered with the community to transform a city street into a green corridor that manages stormwater and promotes active mobility.

Port Lands Flood Protection | Ontario

Landscape architects led the design of a massive flood protection system that integrates natural infrastructure with urban redevelopment on Toronto's waterfront.

Iona Island Wastewater Treatment Plant and Regional Park | British Columbia

Landscape architects developed a compelling vision that complements the treatment plant upgrades to restore ecological processes and protect biodiversity.

Wildfire Resilience Planning | British Columbia

Landscape architects play a key role in Kelowna's wildfire resilience strategy, embedding FireSmart principles into community design and long-term recovery planning.

1 HOUSING

In recent years, the housing affordability crisis in Canada has dominated public debate, and government policies and programs have responded by setting ambitious housing targets to build *3.87 million new homes by 2031*.^[1] Cities have been supported with incentives and funding, such as the *Housing Accelerator Fund*,^[2] to speed up housing delivery to meet these goals. Pressure has been mounting on municipalities to reduce regulations, cut 'red tape', expedite urban design review processes, and reduce development charges. Though well-intended and important, this political climate has resulted in a narrower focus on the speed and efficiency of housing supply, shifting away from the quality, sustainability, and livability of the resulting homes and communities.

In recent years, housing has been built across the country at unprecedented rates, resulting in a major building boom that has radically changed the landscapes and skylines of our cities. Progress on housing has been tracked based on the number of units delivered per year relative to targets, with little monitoring of the affordability and quality of the end products. Unit sizes have continued to shrink, building have been getting bigger and taller, and requirements for contributions to public open space,

neighborhood parks, amenities, the local microclimate, and broader city-building continue to decline. There has been a mismatch between the housing products being delivered (condos as investment assets) and the demand for high-quality, livable family homes and neighborhoods.

The current slowdown due to global market shifts is an opportunity to think critically and change course toward more sustainable models of housing delivery.

How can we achieve more affordable housing delivery in complete communities,^[3] without undermining quality of life and long-term sustainability?

As governments attempt to intervene to solve the housing crisis through the development of dense new urban communities on public lands, a more multifaceted approach to planning and measuring success is needed to achieve the right balance between affordability, livability, and sustainability.

Planning and designing housing holistically to achieve these

125,000

target for new homes in 2024

94,908

new homes created in Ontario in 2024

75.93%

target reached in 2024

73,617

housing starts in 2024

14,381

additional residential units in 2024

2,278

long-term care beds in 2024

2,807

post-secondary student housing beds in 2024

1,825

congregate retirement home suites in 2024

Ontario: Tracking housing supply progress, Data last updated: December 15, 2025 | Government of Ontario

multiple objectives, by simultaneously balancing priorities between an individual project, the neighbourhood, and the city scale, requires systems thinking, multidisciplinary knowledge, and collaboration.

Landscape architects are well-positioned to lead this kind of integrated design approach to community planning.

As generalists with knowledge in both natural and built systems, they coordinate diverse, specialized, technical disciplines to deliver holistic designs that balance multiple priorities, linking housing development with sustainable mobility networks and climate resilient infrastructure. Focused on maximizing the potential of the site, landscape architects analyze where and how to best situate development into the natural environment and urban context, limiting urban sprawl, and recognizing sites that are environmentally risky or inappropriate for construction. They navigate and integrate community input, and respond sensitively to context and site opportunities and constraints, instead of treating sites as blank slates.

The contributions of landscape architects are particularly valuable at the early stages of planning when decisions are being made on density, built form, the open space framework, microclimate parameters, sustainability targets, and green infrastructure integration. Yet they are often the last to be engaged in housing projects, often too late to influence the important decisions that will shape communities for decades to come.

Landscape architects can serve as valuable strategic advisors for housing policy development early on, and as leaders and participants in collaborative multidisciplinary teams that establish the Zoning, Secondary and District Plans, and Urban Design Guidelines for urban regeneration areas. Sustainability frameworks like Toronto's Green Standard (TGS) set environmental requirements for development, and by doing so necessitate the involvement of landscape architects early in the development planning process to plan for the space and soil volumes required to integrate trees and green infrastructure.

Neighbourhood-scale development on large contiguous lands offers greater opportunities for integrated planning and design with higher potential for sustainability and community well-being, than individual projects on constrained infill sites. By integrating nature-based infrastructure as part of the public realm early on, and refining built form to modulate local microclimates, well designed and planned communities can reduce environmental impacts and increase the quality of life by providing ecosystem services, climate resilience, and health benefits. Several examples of large-scale neighborhood developments are ongoing across Canada's major cities, including: *Downsview*, the *Port Lands* and the *Eastern Waterfront* in Toronto, *LeBreton Flats* and *Zibi* in Ottawa, *Quartier des Lumières* and *Les Bassins du Nouveau Havre* in Montreal, and *ᑭᐱᐱᐱᐱᐱ / Iyá Imexw / Jericho Lands* and the *Broadway Plan* in Vancouver.

As more lands across Canada's cities are redeveloped as part of the national response to the housing crisis, it is essential to be ambitious not only in the quantity of units, but the quality of neighbourhoods, by taking a holistic, multifaceted approach to planning, design, and delivery. The expertise landscape architects bring in addressing complex, intersectional issues, integrating input from diverse stakeholders, envisioning alternative future models of urban living, and effectively communicating these visions to the public is a valuable asset for government agencies working to deliver sustainable, affordable housing for the long term. Including landscape architects at the table earlier in the process, at the policy, planning, and urban design stages, can help embed integrated design thinking in the decision-making process. A landscape approach prioritizes not only affordability and efficiency, but also quality, livability, and resilience, leading to more sustainable outcomes in the long run.

As plans to develop housing intensify across Canadian cities, a greater focus on quality, livability, and sustainability will be crucial to achieve lasting impact.



2.1-kilometer runway is turned into a pedestrianized street, lined by housing, shops, and schools | SLA

Downsview

Toronto, Ontario

The transformation of Toronto's decommissioned Downsview Airport into a massive new urban district of 12 neighbourhoods, is creating 41,500 new jobs and 50,000 new housing units on 210 hectares of land in North Toronto, in close proximity to subway stations, regional rail, and the large and iconic Downsview Park. Managed by Canada Lands and Northcrest, in collaboration with the City of Toronto, the project has set ambitious goals for sustainability, climate resilience, and a high quality of life, guided by a significant public consultation campaign over four years early in the process.

Landscape architecture firm SLA, working alongside Urban Strategies, Henning Larsen, and KPMB, proposed the concept of city nature as the driving principle for the vast airport site. They established a landscape network of large parks, trails, and connective public realm to organize the districts and neighbourhoods in the Framework Plan. The massive runway and intersecting taxiway were retained and reimagined through a design competition won by landscape architects MVVA as a linear park and series of open spaces giving form and a distinct identity to the neighbourhood and referencing the former airport that gives it its name. Working closely with planners, urban designers, architects, and engineers, and a dedicated team of City staff, the landscape architects negotiated smart solutions to manage stormwater from the vast development area on site, incorporating bioretention areas within parks, and connecting the different land uses of the neighbourhood into an integrated system. Similarly, building scale and relationships to the public realm are designed to optimize local microclimate, providing sun access and protection from wind to key public spaces, and prioritizing the pedestrian experience.

Progress continues on district plans for each of the 12 neighbourhoods, with construction slated to begin in the next few years and deliver the first few buildings by 2031.

The project's 'city-nature' vision, its landscape-led framework plan, and its collaborative planning process have made it a major success, already winning multiple awards.



The Framework Plan with a new hierarchy of nature, public space, and buildings | SLA

Learn more about this project:

- » [The Future of Downsview | id8](#)
- » [Four Years of Meaningful Engagement. Id8 Downsview.](#)
- » [id8 Downsview | Canada Lands Company](#)
- » [Downsview West: One of the Largest Transit-Oriented Communities in Toronto's History | Canada Lands Company](#)



ʔəyálməxʷ / Iyálməxw / Jericho Lands

Vancouver, British Columbia

Housing and community development on lands that Indigenous communities have reclaimed through purchase or settlement with the Government of Canada is increasingly recognized as a meaningful opportunity for reconciliation in Canada. Indigenous-led redevelopment projects can provide affordable homes, support business development, express Indigenous values and support self-sufficiency within these communities.

In Vancouver, three Coast Salish Nations – the Musqueam, Squamish, and Tsleil-Waututh – jointly called MST Nations, are leading the development of several large-scale housing projects, in a joint venture with Canada Lands Company and in collaboration with the City of Vancouver. Jericho Lands is a culturally meaningful 36-hectare site overlooking Burrard Inlet, which will be developed into a new neighbourhood of 13,000 new homes for around 24,000 residents and space for around 3,000 jobs, leveraging a planned extension of the SkyTrain to UBC for sustainable mobility. It will also include community amenities and 12 ha of parks and open spaces, and walking and cycling paths. The land is to be retained in MST ownership in perpetuity to ensure affordable housing tenure and continued land stewardship with high sustainability objectives.

PFS Studio were the landscape architect and urban design firm on the team led by USI, and worked closely with Musqueam, Squamish and Tsleil-Waututh cultural liaisons to co-develop the site plan based on Coast Salish values, emphasizing the existing ridge, forest, and drainage patterns of the site as an organizing framework for the mixed-use, high-density, multimodal community.

One third of the site is designed as a car-free parks and open space system over deep soil that can grow and sustain large tree communities, and that integrates rainwater collection, conveyance and infiltration; ecological complexity for non-human species; a variety of diverse multi-generational gathering spaces; and pedestrian and cyclist connectivity. The parks and open space system structure the built fabric, celebrating the dramatic grade change and culturally important views of the mountains, ocean, and Jericho



Beach Park. Three mixed-use towers at the future Jericho Sky Train station are visible from Downtown Vancouver on the other side of Burrard Inlet, and are representative of the strength of the Musqueam, Squamish and Tsleil-Waututh Nations coming together to create opportunities within their traditional territories.

For ʔəyálməxʷ / Iyálməxw / Jericho Lands, the landscape architects and the broader project team had to navigate significant pushback by community groups that opposed the dense high-rise form of development proposed in the context of the low-rise affluent surrounding neighbourhood. They worked closely with the City of Vancouver to thoughtfully integrate density into the site and contribute to the neighbourhood's public realm.

Landscape architects bring significant value to these projects, collaborating with Indigenous communities to interpret their worldviews and priorities into thoughtful design and tangible outcomes.

Learn more about this project:

- » [ʔəyálməxʷ / Iyálməxw / Jericho Lands | Urban Strategies](#)
- » [Jericho Lands | Canada Lands Company](#)
- » [Jericho Lands Planning Program | City of Vancouver](#)

2 MOBILITY

Whether it's a walk to school or the shipping of goods across our vast country, the mobility networks we build influence our daily lives in countless ways. Roads, sidewalks, bike lanes, and public transportation networks dictate more than just the speed with which we travel from Point A to Point B; they impact our access to opportunities, social interaction, and our physical and mental well-being.

Twentieth- and twenty-first century planning prioritized car travel and road networks in community design, creating limited options for people to move through the places they live. Unsafe street crossings and narrow sidewalks (or none at all!) make healthy, sustainable options such as walking or biking feel unsafe. Large, wide highways connecting our growing cities and towns create isolated neighbourhoods, driving further dependence on car travel.

How can we deliver transportation systems that reduce greenhouse gases while supporting healthier communities?

Adapting to and mitigating climate change requires us to rethink and redesign how we move through cities and landscapes. When considered with intention, our transportation infrastructure can simultaneously support movement, placemaking, ecological function, and public health. Landscape architects are uniquely positioned to lead this transformation by integrating infrastructure with nature-based solutions and human-centered design.

By thinking about mobility in the context of larger ecological systems, landscape architects design mobility networks that provide benefits like biodiversity and stormwater management, prioritizing growing conditions for large, mature trees that cool urban areas. Green corridors planted with native species provide habitat for pollinators and small

Our mobility systems are also one of the major drivers of the climate crisis. The transportation sector was responsible for approximately 23% of greenhouse gas emissions in Canada in 2023.^[4] By continuing to design cities around cars, we deepen our dependence on fossil fuels and worsen air pollution, congestion, and carbon output. Alternatively, low-carbon mobility options such as walking, cycling, and transit can offset the impacts and emissions associated with vehicular travel, and become recreational assets that improve our health and well-being.

wildlife, while also offering shade, reducing urban heat, and improving air quality. In environmentally sensitive areas, mobility networks are being created specifically with non-human travel in mind, with elevated highway crossings reconnecting fragmented ecosystems.

Landscape architects make low-carbon mobility options not just functional, but beautiful and desirable through considering the human experience. Streetscapes, trails, and transit corridors can reflect cultural narratives, local materials, and community values.

By embedding storytelling and sensory experience into mobility infrastructure, we create journeys that are not only functional but meaningful.

Working with local communities, we create place-specific strategies to foster active transportation, improving public health, and reducing reliance on fossil fuels.

Promenade Samuel-De Champlain

Quebec City, Quebec

Promenade Samuel-De Champlain | Daoust Lestage Lizotte Stecker Benech as Lead Designer - architecture, urban design, landscape. Consortium landscape : Daoust Lestage Lizotte Stecker, Option aménagement, Williams Asselin Ackaoui



In 2008, the Commission de la capitale nationale du Québec, in partnership with the City of Québec and the Ministry of Transport, sought to redevelop a section of Champlain Boulevard in honour of Quebec's 400th anniversary. The land adjacent to the St. Lawrence River coastline had been impacted by hundreds of years of industrialization, from timber shipping and ship building in the 1800s through oil industry, port operations, and railway construction. These activities, and the eventual construction of Champlain Boulevard, created a barrier between the city and the river that it was founded upon.

With the railway decommissioned and the objective of restoring the river's edge and reconnecting the city to the St. Lawrence, the provincial government gifted the riverbank lands to the City. They were subsequently reinvisioned as an urban park spanning 6.8 km from the Pierre-Laporte Bridge to Cote Gilmour. Undertaken in three phases, work on the promenade included bicycle and pedestrian paths, water access ramps, sculpture gardens, sportsfields, and extensive ecosystem restoration. Landscape architects at Daoust Lestage Lizotte Stecker Benech as lead designers, envisioned the promenade as six distinct areas, each with its own unique identity. Running through each of these zones,

the pedestrian and bicycle path act as the project's connecting spine. In creating a new recreational and mobility asset, the trails allow visitors to explore the shores of the river and move through their city with ease.

Historical interpretation is woven through the promenade, creating an attraction for both locals and tourists. Themed gardens reinterpret the former quays from the golden age of wood and shipbuilding. Walking paths wind through historic woodlands, containing archaeological remains over 5,000 years old and numerous hundred-year-old trees. Its success underscores the economic value of landscape-led mobility networks.

By restoring ecological function, reconnecting people to place, and creating spaces that support active transportation, the Promenade Samuel-De Champlain demonstrates how mobility infrastructure can foster climate adaptation, cultural storytelling, and also serve as an economic catalyst.

Learn more about this project:

- » [Promenade Samuel-De Champlain, CSLA Awards Atlas](#)
- » [The Unbounded Current | Landscape Architecture Magazine](#)

Peter Lougheed Wildlife Overpass

Bow River Valley, Alberta

In the Bow Valley near Canmore, Alberta, Highway 1 has acted as both a vital transportation corridor and a barrier to wildlife movement. Stretching across the mountain landscape, the Trans-Canada Highway carries thousands of vehicles daily, severing critical habitat connections for bears, wolves, elk, and other species that rely on seasonal migration routes. For decades, this contributed to collisions, habitat loss, and declining wildlife populations.

To address these pressures, Alberta Transportation constructed the Peter Lougheed Wildlife Overpass, the first of its kind built outside a national park in Alberta. Completed in 2024, the project represents a major investment in ecological connectivity, designed to connect fragmented habitats on either side of the highway.

A team of landscape architects, engineers, and ecologists designed the overpass to include two arches, each spanning two lanes of traffic, with the ability to accommodate three in the future. The bridge is covered with soil, native vegetation, and natural features that guide wildlife safely across. Fencing along the highway directs animals toward the crossing, while monitoring systems track usage and effectiveness. Within its

first years of operation, the overpass documented use by a wide range of species including deer, elk, cougars, and small mammals, demonstrating its success as a vital ecological corridor.

More than an engineering solution, the Peter Lougheed Wildlife Overpass illustrates how **mobility infrastructure can be designed to serve both people and non-human life**. By reducing collisions, it improves safety for motorists, and by reconnecting habitats, it supports biodiversity and climate resilience. In a region facing increasing development pressures, the project signals a shift in how transportation networks can be planned not just as conduits for vehicles, but as systems that integrate ecological health and long-term sustainability.

Learn more about this project:

- » [Peter Lougheed Wildlife Overpass: Making highways safer for drivers and animals through innovative Wildlife Overpass design | DIALOG](#)
- » [Peter Lougheed Wildlife Overpass, CSLA landADAPT case study series](#)

Peter Lougheed Wildlife Overpass | DIALOG



St. George Rainway

Vancouver, British Columbia

Our day-to-day mobility networks present unique opportunities to develop sustainable infrastructure that manage stormwater, treat pollutants from roadways, increase biodiversity, and promote healthy movement. In the Mount Pleasant neighbourhood of Vancouver, the St. George Rainway was first envisioned by community members with the desire to increase urban nature and honour the buried creek that runs below St. George Street. With increased population and pressures from climate change, interest in the project grew, and the City of Vancouver partnered with the St George Creek Stewards to develop and implement the project. Over four city blocks, green rainwater infrastructure including rain gardens and bioswales will treat and manage stormwater, while adjacent roadway improvements will improve safety, comfort and accessibility.

City of Vancouver landscape architects worked with community members to codevelop the design of the Rainway, taking inspiration from nature. Check dams, inspired by beaver dam construction, slow the flow of water through the rain gardens, while inlets inspired by the headwaters of a stream provide areas for rainwater to enter into the Rainway. Public art is integrated throughout the design, including water-inspired planting patterns integrated into gathering spaces.

The green rainwater infrastructure will ultimately reduce street flooding, treat rainwater pollutants from roadways to protect downstream water quality, and both slow and reduce the volume of water entering pipes. Testing of other Vancouver rain gardens found that they successfully filtered out stormwater pollutants, including plastics and 6PPD-quinone, a chemical harmful to salmon, *by up to 98%*.^[5] The biodiversity created by the Rainway will provide animal habitat for different species, and tree plantings will provide important cooling shade during the summer months.

In addition to the green rainwater infrastructure, the Rainway improvements will promote pedestrian and bicycle travel. The entire roadway has been redesigned to improve accessibility and promote healthy mobility options. One lane of vehicular



traffic will be removed, while a new local street bikeway will run for a portion of the road, and a car-free space will be provided for a portion of the street.

With the St. George Rainway, landscape architects and community members have integrated green infrastructure with active mobility to create a multifunctional corridor for stormwater management, active mobility, and community learning.

Landscape architecture-led design can transform streets into resilient, healthy, and engaging public spaces that serve both people and the environment.

Learn more about this project:

- » [St. George Rainway, CSLA landADAPT case study series](#)
- » [St George Rainway Project | City of Vancouver](#)

3 CLIMATE DEFENCE

Climate change impacts communities differently depending on their geographic context and environmental setting. For people living in cities, these impacts may be experienced daily in the form of rising heat, poor tree canopy, declining air quality, and flooding caused by inadequate stormwater infrastructure and expanses of impermeable surfaces. Whereas in rural areas, climate risks can manifest as reduced mobility due to poorly maintained roads and bridges (climate stressors such as extreme weather and deferred investment cause infrastructure decline), food scarcity, affordability issues, poor water quality from pollutants, water shortages, wildfires, and severe weather disrupts land-based livelihoods.

As these challenges intensify and overlap across scales, addressing them requires approaches that move beyond isolated interventions toward coordinated, multi-disciplinary design and policy responses. Canadian landscape architects are working at this intersection on diverse infrastructure projects that respond to the issues of rising heat, surface water runoff, and extreme weather events such as droughts, fires, floods, and coastal erosion. With expertise in systems thinking, landscape architects are essential to shaping infrastructure that is adaptable to change and context specific.

While infrastructure encompasses a range of interventions, climate defence increasingly involves solutions that align with **natural infrastructure** including wetlands, forests, floodplains, dunes, and vegetated buffers that inherently regulate hydrological, climatic, and ecological functions. When maintained or restored, these systems perform essential services like flood attenuation, carbon sequestration, and erosion control. Landscape architects are uniquely trained to enhance natural infrastructure, designing **green infrastructure** using techniques referred to as Nature-based Solutions (NbS), including constructed wetlands, bioswales, rain gardens, green roofs, and urban tree canopies. These approaches are not only more adaptive, but typically less costly. Beyond their climate adaptation value, NbS offer broader community benefits; they create habitat for pollinators and wildlife, improve biodiversity, support public health through cleaner air and water, and foster cultural connection to place through spaces for recreation and socializing.

Historically, climate adaptation has relied heavily on **“grey” infrastructure**, such as dams, floodwalls, channelization, and stormwater detention systems (e.g., to manage flooding in areas with low soil permeability and high rainfall). Similarly, coastal defence has relied on seawalls, which can exacerbate erosion along adjacent shorelines. In many cases, development in floodplains has proceeded under the assumption that grey infrastructure systems or land infilling can sufficiently mitigate risk. While these techniques may offer short-term protection, they often work against natural

Reshaping a process, and vision for future adaptation innovations in the Sea2City Design Challenge | PWL Partnership



processes - processes that are increasingly volatile and exceed human and technological control.

With the increasing impacts of climate change, it is clear that traditional infrastructure needs to be combined with nature-based solutions. Cities especially, are not separate from nature and need to be considered as part of our larger natural systems. Defending against climate risks is not only about preparing for extreme events but also about building everyday resilience.



How can landscape architects reshape our cities by integrating natural systems into everyday infrastructure?

Landscape architects are capable of designing holistic climate change responses that blur boundaries among built structures, green spaces, and natural areas. One way of achieving this is by reducing the size of grey infrastructure and integrating it alongside natural systems. For example, in an urban context, stormwater systems can be daylighted and paired with rain gardens that filter pollutants and direct excess water to urban planting beds. With adequate soil volume, water and aeration, these beds can support the growth of large urban trees, which in turn provide cooling, habitat, and public amenity. Landscape architects play a key role in advocating for and designing green/grey infrastructure not just in parks or civic spaces, but in everyday contexts such as housing developments and along mobility routes.

By reframing climate defence as climate adaptation and resilience, landscape architects can lead a shift in infrastructure design - one that works with nature, integrates human habitat needs with ecological function, and delivers long-term benefits for both communities and ecosystems.

Learn more about this project:

» [Sea2City Design Challenge, CSLA Awards Atlas](#)

Port Lands Flood Protection

Toronto, Ontario

The \$1.4 billion Port Lands Flood Protection Project is transforming Toronto's flood-prone industrial port district into a climate-adaptive mixed-use waterfront community. Once home to the Ashbridges Bay Marsh, the mouth of the Don River was infilled and industrialized in the early 20th century, leaving it polluted, channelized, and highly vulnerable to flooding.

Waterfront Toronto's international design competition in 2007 selected a bold vision by landscape architects MVVA for an Urban Estuary. When the project was finally funded in 2017, MVVA led a large interdisciplinary team in implementing the project including engineers, ecologists, and infrastructure specialists.

Toronto's ongoing waterfront revitalization and the Port Lands redevelopment was catalyzed by nature based flood protection infrastructure designed by landscape architects to unlock the area for housing development. Landscape architects led this complex infrastructure project, providing both design vision and technical expertise, while overseeing

a large team of technical disciplines to ensure the design intent was realized.

With Biidasige Park, recently opened to the public in July 2025, the project protects 290 ha from flooding to enable redevelopment of several new neighborhoods, and delivers 25 ha of new parkland. The next phase of the waterfront development on the newly formed Ookwemin Minising Island and Quayside is slated to provide 14,000 new homes (including affordable rental housing), and 100,000 skilled trade jobs, equating to \$13.2 billion dollars of economic development opportunity.

This is an exemplary model for landscape-led natural infrastructure enabling climate resilient housing development in Canadian cities.

Learn more about this project:

- » [What Is The Port Lands Flood Protection Project? | The Port Lands](#)
- » [CSLA landADAPT Case Study Series](#)



Port Lands Flood Protection, Waterfront Toronto | Michael Van Valkenburgh and Associates

Iona Island Wastewater Treatment Plant and Iona Park

Richmond, British Columbia

Located in Richmond, British Columbia, directly across from x^wməθk^wəjəm/Musqueam in the Fraser River Estuary, the Iona Island Wastewater Treatment Plant (IIWWTP) and Iona Beach Regional Park (IBRP) Projects combined the critical upgrade of an existing wastewater treatment facility with the transformation of a 114-hectare regional park. Led by Space2Place for Metro Vancouver, the projects aimed to restore the ecological processes of the north Sturgeon Bank by reconnecting the river and sea, creating off-channel habitats, regenerating freshwater wetlands, and restoring upland ecosystems using ecosystem-based, flood-protection and climate-adaptive strategies.

The projects were initiated in response to the 2012 Wastewater Systems Effluent Regulations, which aimed to improve water quality across Canada. As one of the last wastewater treatment plants on North America's west coast providing only primary-level treatment, the intention was to upgrade the facility to tertiary-level treatment while pairing infrastructure upgrades with ecological restoration efforts. In response to these regulations, Metro Vancouver adopted a proactive and comprehensive approach that went beyond compliance, incorporating climate adaptation, biodiversity enhancement, ecological regeneration, and community integration.

Unlike traditional large-scale engineering-centric infrastructure projects, landscape architects at Space2Place were involved early in project development. Their early participation contributed significantly to site understanding and directly influenced key design decisions, including the plant's location and suitable construction areas. The project adopted an Integrated Design Process, bringing together engineering, architecture, landscape architecture, ecology, and archaeology to ensure ecological, social, and cultural conditions were considered from the outset.

Existing infrastructure in the Fraser Estuary has disrupted natural estuarine processes, degrading critical habitat for juvenile salmon and migratory birds along the Pacific Flyway. Climate change further compounds these challenges, with projections estimating up to one metre of sea-level rise by

2100, increased flooding risk, warmer temperatures, and stress on vulnerable coastal wetlands.

In response, Space2Place developed a vision defined by two core objectives: ecological restoration and climate adaptation. Proposed strategies include reopening the causeway to reconnect river and sea, restoring intertidal wetlands, creating off-channel salmon habitat, and implementing ecosystem-based flood protection such as living breakwaters and sediment augmentation.

By integrating landscape-led ecological systems with essential infrastructure, the project demonstrates how landscape architecture can lead climate defence, transforming wastewater infrastructure into a resilient, adaptive, and regenerative landscape.

Learn more about this project:

» [IIWWTP, CSLA landADAPT Case Study Series](#)

Iona Island Wastewater Treatment Plant & Regional Park Projects, Flood Protection Strategies | space2place



Wildfire Resilience Design and Planning

Kelowna, British Columbia

Landscape architects play a critical role in designing wildfire-resilient communities. They understand that some fires occur naturally, and Indigenous and rural communities have practiced controlled burning for centuries as a landscape management strategy. Yet, Canada is experiencing more extreme unplanned wildfires that cause property damage, threaten safety, and destroy wildlife habitats. Through their interdisciplinary expertise, landscape architects contribute to wildfire resilience planning and design by mapping and documenting assets for protection, designing landscapes that reduce fuel loads through strategic vegetation management, creating defensible spaces around buildings, and incorporating nature-based fire management infrastructure such as wetlands or open corridors that act as fire breaks. Beyond spatial planning and design, landscape architects, in

collaboration with ecologists, foresters, and planners, also provide long-term thinking around strategies for recovering from fire events and restoring biodiversity.

Kelowna's recent planning work exemplifies how municipal wildfire-resilience efforts align with landscape architect's expertise. Kelowna, British Columbia, is situated in one of the most wildfire-prone valleys in the province, where steep topography, continuous forest and grassland fuels, and a warming climate create extreme fire exposure. Experience from past fires has proven that landscape design is a critical tool for mitigating risk and allowing communities to coexist with fire-dependent ecosystems.

To address Kelowna's wildfire risks, the City assembled a team of forestry, planning, and emergency-management



professionals to develop a comprehensive Community Wildfire Resiliency Plan (CWRP). The plan integrates core FireSmart principles including vegetation management, community-level preparedness, development planning, and public education into a coordinated strategy for reducing wildfire risk; recently, these have been embedded in city-wide landscaping by-laws. While the CWRP was developed by a team of allied professionals, many of its recommendations correspond directly with the expertise of landscape architects. From city-wide planning approaches to landscape design for residential and commercial sites, landscape architects can lead initiatives across all scales of implementation.

In practice, this involves supporting cities in designing denser, complete neighbourhoods with fewer single-detached residential developments (often more vulnerable to wildfires); assessing proposed park and open greenspace during neighbourhood planning to identify hazards early and integrate fuel-reduction strategies; and developing signage to help educate residents on mitigation efforts.

Through Kelowna's adoption and promotion of FireSmart principles, wildfire risk is understood as a shared responsibility across the entire community.

Since this work covers policy interpretation, spatial planning, ecological design, and public communication, landscape architects are uniquely qualified to translate FireSmart, or equivalent, recommendations, into landscape interventions.

Learn more about this project and the Home Ignition Zone:

» [Community Wildfire Resiliency Plan | City of Kelowna](#)

» [FireSmart Canada](#)

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